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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,489	12/05/2003	Frans Lodewijk Plantenga	ACH2976 US	9745

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LOUIS A. MORRIS
AKZO NOBEL INC.
7 LIVINGSTONE AVENUE
DOBBS FERRY, NY 10522-3408

EXAMINER
DOUGLAS, JOHN CHRISTOPHER

ART UNIT	PAPER NUMBER
1797	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/728,489	Applicant(s) PLANTENGA ET AL.	
	Examiner John C. Douglas	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Examiner acknowledges the response filed on 10/24/2007 containing remarks and amendments to the claims. A new rejection follows, necessitated by amendment.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clark (US 5100885) in view of Schindler (US 4414141).
2. With respect to claim 1, Clark discloses a process for the hydroconversion of a heavy hydrocarbon feed in the presence of a catalyst mixture of two catalysts that each contain Groups VIB and VIII metals on a porous inorganic support and where the second catalyst has an average pore diameter of 20 nm (see Clark, column 7, lines 67-68, column 9, lines 60-68, column 10, lines 21-25 and 47-51, and column 11, lines 3-15). Also, Clark discloses where the second catalyst can be unimodal, meaning the catalyst would have one set of pores within a given range (see Clark, column 10, lines 12-25). Thus, all pores in the second catalyst would be in the mesopore range having an average pore diameter of 20nm.

Clark does not disclose where the first catalyst has a surface area of at least 100 m²/g, a total pore volume of at least 0.55ml/g, at least 50% of the total pore volume in pores with a diameter of at least 20 nm and 10-30% of the total pore volume in pores with a diameter of at least 200 nm and where the second catalyst has a surface area of at least 100 m²/g. Clark does not disclose that the pore size distribution is for inhibiting sediment formation.

However, Schindler discloses a catalyst with a surface area of 125 m²/g, a total pore volume from 0.75 to 0.95 cc/g, about 60% of the total pore volume in pores with at

least 25 nm (column 1, Table, where the minimum values of porosity were used) and 21% of the total pore volume in pores with a diameter of at least 150 nm (column 1, Table, where the max levels of porosity were used) (see Schindler, column 1, lines 16-32, and Table). Also according to the Table, it is optional for all of the pore volume to be in pores greater than 25 nm.

Schindler discloses that such a catalyst has improved hydrotreating activity and improved catalyst life (see Schindler, column 1, lines 33-35).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Clark to include a catalyst with a surface area of 125 m²/g, a total pore volume from 0.75 to 0.95 cc/g, about 60% of the total pore volume in pores with at least 25 nm and 21% of the total pore volume in pores with a diameter of at least 150 nm in order to improve hydrotreating activity and catalyst life.

Also, claims containing functional language are limited only by the steps in the claims (see MPEP 2184 III.). Therefore, the amendment adding that the pore size distribution is for inhibiting sediment formation does not further limit the claim because such language is functional language.

3. With respect to claims 2-4, Clark in view of Schindler disclose everything in claim 1 (see paragraph 5) and Clark discloses a graded system of different types of catalyst and where the second catalyst has an average pore diameter of 20 nm, about 3 to about 22 wt% of a Group VIB metal component, about 0.4 to about 8.0 wt% of a Group

VIII metal component, and a phosphorus component (see Clark, column 2, lines 38-53, column 10, lines 21-25, and column 11, lines 3-20, 36-41, and 46-51).

Clark does not disclose that the porous inorganic carrier has at least 3.5 wt% silica and that the catalyst has a surface area of at least 150 m²/g.

Schindler discloses a catalyst with an alumina support including up to 10 wt% silica and a surface area between 150 to 300 m²/g (see Schindler, column 1, lines 56-60).

Schindler discloses that such a catalyst has improved hydrotreating activity and improved catalyst life (see Schindler, column 1, lines 33-35).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Clark to include a catalyst with an alumina support including up to 10 wt% silica and a surface area between 150 to 300 m²/g in order to improve hydrotreating activity and catalyst life.

4. With respect to claim 5, Clark discloses where 60 to 90 % of the feed boils above 1000 degrees F, where the feed contains about 1 to about 10 wt% sulfur, and where the feed contains 22 wt% Ramscarbon (see Clark, column 7, lines 59-63, column 8, lines 10-11, and column 15, Table III).

5. With respect to claim 6, Clark discloses where the process is carried out in an ebullated bed (see Clark, column 9, lines 45-48).

6. With respect to claim 7, Clark discloses a catalyst mixture of two catalysts that each contain Groups VIB and VIII metals on a porous inorganic support and where the second catalyst has an average pore diameter of 20 nm (see Clark, column 9, lines 65-

68, column 10, lines 21-25 and 47-51, and column 11, lines 3-15). Also, Clark discloses where the second catalyst can be unimodal, meaning the catalyst would have one set of pores within a given range (see Clark, column 10, lines 12-25). Thus, all pores in the second catalyst would be in the mesopore range having an average pore diameter of 20nm.

Clark does not disclose where the first catalyst has a surface area of at least 100 m²/g, a total pore volume of at least 0.55ml/g, at least 50% of the total pore volume in pores with a diameter of at least 20 nm and 10-30% of the total pore volume in pores with a diameter of at least 200 nm and where the second catalyst has a surface area of at least 100 m²/g. Clark does not disclose that the pore size distribution is for inhibiting sediment formation.

However, Schindler discloses a catalyst with a surface area of 125 m²/g, a total pore volume from 0.75 to 0.95 cc/g, about 60% of the total pore volume in pores with at least 25 nm (column 1, Table, where the minimum values of porosity were used) and 21% of the total pore volume in pores with a diameter of at least 150 nm (column 1, Table, where the max levels of porosity were used) (see Schindler, column 1, lines 16-32, and Table). Also according to the Table, it is optional for all of the pore volume to be in pores greater than 25 nm.

Schindler discloses that such a catalyst has improved hydrotreating activity and improved catalyst life (see Schindler, column 1, lines 33-35).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the catalysts of Clark to include a catalyst with a

surface area of $125 \text{ m}^2/\text{g}$, a total pore volume from 0.75 to 0.95 cc/g, about 60% of the total pore volume in pores with at least 25 nm and 21% of the total pore volume in pores with a diameter of at least 150 nm in order to improve hydrotreating activity and catalyst life.

Also, claims containing functional language are limited only by the steps in the claims (see MPEP 2184 III.). Therefore, the amendment adding that the pore size distribution is for inhibiting sediment formation does not further limit the claim because such language is functional language.

7. With respect to claims 8-10, Clark in view of Schindler disclose everything in claim 7 (see paragraph 9) and Clark discloses a graded system of different types of catalyst and where the second catalyst has an average pore diameter of 20 nm, about 3 to about 22 wt% of a Group VIB metal component, about 0.4 to about 8.0 wt% of a Group VIII metal component, and a phosphorus component (see Clark, column 2, lines 38-53, column 10, lines 21-25, and column 11, lines 3-20, 36-41, and 46-51).

Clark does not disclose that the porous inorganic carrier has at least 3.5 wt% silica and that the catalyst has a surface area of at least $150 \text{ m}^2/\text{g}$.

Schindler discloses a catalyst with an alumina support including up to 10 wt% silica and a surface area between 150 to $300 \text{ m}^2/\text{g}$ (see Schindler, column 1, lines 56-60).

Schindler discloses that such a catalyst has improved hydrotreating activity and improved catalyst life (see Schindler, column 1, lines 33-35).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Clark to include a catalyst with an alumina support including up to 10 wt% silica and a surface area between 150 to 300 m²/g in order to improve hydrotreating activity and catalyst life.

Response to Arguments

Applicant's arguments with respect to claims 1 and 7 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C. Douglas whose telephone number is 571-272-1087. The examiner can normally be reached on 7:30 A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCD

1/6/2008



Glenn Caldarola
Supervisor, Patent Examiner
Technology Center 1700